$$T \approx mg \times 98.2 \text{ N}$$

$$\mu_{Al} = \frac{1.25 \cdot 10^{-2}[\text{cm}^2] \cdot 2.60 \left[\frac{\text{g}}{\text{cm}^3}\right] \cdot \cancel{L_1}}{\cancel{L_1}} = 0,0325 \ \frac{\text{g}}{\text{cm}} = 0,00325 \ \frac{\text{kg}}{\text{m}}$$

$$\mu_{St} = \frac{A_{St} \cdot \rho_{St} \cdot \cancel{L_2}}{\cancel{L_2}} = 1.25 \cdot 10^{-2}[\text{cm}^2] \cdot 7.80 \left[\frac{\text{g}}{\text{cm}^3}\right] = 0,0975 \ \frac{\text{g}}{\text{cm}} = 0.00975 \ \frac{\text{kg}}{\text{m}}$$

$$v_{Al} = \sqrt{\frac{T}{\mu_{Al}}} \approx 173.83 \text{ m/s} \qquad v_{St} = \sqrt{\frac{T}{\mu_{St}}} \approx 100,36 \text{ m/s}$$

$$L_1 = 60.0 \text{ cm} \qquad L_2 = 86.6 \text{ cm}$$

"having the joint as one of the nodes"

Antag: n_{Al} loops i Al $\Rightarrow n_{Al} \cdot \frac{\lambda_{Al}}{2} = L_1 \Rightarrow \lambda_{Al} = \frac{2L_1}{n_{Al}}$ (*)

n_{St} loops i St. $\Rightarrow n_{St} \cdot \frac{\lambda_{St}}{2} = L_2$

$v_{Al} = f_{Al} \lambda_{Al}$, $v_{St} = f_{St} \lambda_{St}$

Om $f_{AL} = f_{St} = f \Rightarrow \frac{v_{Al}}{\lambda_{Al}} = \frac{v_{St}}{\lambda_{St}}$

Kombinera med (*) $\Rightarrow \frac{v_{Al} n_{Al}}{2L_1} = \frac{v_{St} n_{St}}{2L_2}$

Lös ut variabeln n_{Al}/n_{St}:

$$\frac{n_{Al}}{n_{St}} = \frac{v_{St}}{v_{AL}} \cdot \frac{L_1}{L_2} = \frac{100.36}{173.83} \cdot \frac{60.0}{86.6} = 0,4 \ (0000)$$

Finn (de minsta) heltalen $n_{St} > n_{Al}$ som uppfylle detta

kandidater $\frac{n_{Al}}{n_{St}} = \frac{1}{2} = 0.5$, $\frac{1}{3} \approx 0.33$, $\frac{2}{3} \approx 0.667$

a) $\frac{2}{4} = 0.5$, $\frac{2}{5} = 0.4$ (!) $\Rightarrow n_{Al} = 2$, $n_{St} = 5$.

$$f_{min} = f_{AL} = \frac{v_{Al}}{\lambda_{Al}} = \frac{v_{Al} \cdot n_{Al}}{2L_1} = \frac{173.83 \cdot \cancel{2} \ [\text{m/s}]}{\cancel{2} \cdot 0,60 \ [\text{m}]} = 289,72 \approx \underbrace{290}_{[289]} \ [\text{s}^{-1} = \text{Hz}]$$

b) 8st noder inkl. ändpunkterna